

EVIDENCE OF GENETIC RELATIONSHIP BETWEEN  
CHIBCHAN AND UTO-AZTECAN

Dennis Holt  
UCLA

The purpose of this paper is to provide evidence of genetic relationship between the Chibchan and Uto-Aztecan language families. As I believe the following presentation shows, the relationship is so close that it is somewhat surprising that it has not been demonstrated before now. The failure of linguists to notice the relationship is undoubtedly a result of the traditional lack of attention given to American Indian languages south of Guatemala.

Only two scholars seem to have previously recognized the possibility of linking Chibchan and Uto-Aztecan — Nils Holmer and Morris Swadesh. In his *Critical and Comparative Grammar of the Cuna Language* (1947), Holmer notes a number of lexical and grammatical resemblances between Cuna and Classical Nahuatl, but he does not explicitly postulate a close genetic relationship between the two languages. Instead, he seems to be implying that the similar forms are members of a set of shared retentions from some ancient Amerindian Ur-Sprache, a fact which tends to reduce the **credibility** of his comparisons. Nevertheless, it was Holmer's work that put the bug, for a short time at least, into Swadesh's ear.

In an article in *Word* in 1954, Swadesh presents a small set of lexical matchings from Cashinawa, Chibcha and Uto-Aztecan that he claims are evidence for postulating a genetic relationship among the Panoan, Chibchan and Aztec-Tanoan families. Swadesh's matchings and conclusions, while provocative, were apparently not sufficient to impel other researchers to investigate his claim more carefully, and Swadesh himself apparently never returned to look at the problem in any great detail.<sup>1</sup> The lack of rigorous comparative studies within the three families was certainly an impediment to further research on the question.

Since the time of Swadesh's claim, a large body of new comparative materials has been made available for the three families. The works of Voegelin, Voegelin and Hale (1962) and Miller (1967) have provided a broad and solid basis for comparative studies in Uto-Aztecan phonology and lexicon and for comparison with other language groups. The studies of Shell (1965), Key (1968) and Girard (1971), in addition to having provided rather convincing evidence of genetic relationship between the Panoan and Tacanan families, have also provided sound reconstructions for cross-group comparisons involving the Pano-Tacanan phylum. And my own recent comparative work with the Chibchan languages has resulted in the first large set of broadly based reconstructions of Proto-Chibchan. It has now become possible to reassess Swadesh's Kio-chibchan-Panoan hypothesis in the light of all this new information.

In an earlier paper (Holt 1976) I presented evidence which I think clearly shows the existence of a genetic relationship between the Chibchan and Tacanan families (and, by implication, between Chibchan and Panoan also). I also listed there a number of Proto-Uto-Aztecan forms which appear to be cognate with certain of the Chibchan-Tacanan sets. In this paper I will provide further evidence of genetic relationship between Chibchan and Uto-Aztecan.

Below I have listed what I feel are the most probable cognate sets that I have discovered between Proto-Uto-Aztecan and Proto-Chibchan. (The remaining probable but problematical sets that I have discovered would make up another list about as long as this one.) The PUA forms cited are in most cases the formulae proposed by Miller and are indexed by his set numbers. Miller's \*e has been retranscribed as \*ɿ in accordance with more recent hypotheses (cf. Langacker 1970). In a few cases where Miller does not propose a 'reconstructed' form, I have provided one on the basis of the reflex forms he lists. My Proto-Chibchan reconstructions are based primarily on data from six diagnostic languages: Paya<sup>2</sup>, Guatuso, Bribri, Cuna, Cágaba and Chibcha. Supplementary data from other languages has been used whenever necessary. Within each cognate set, the PC form is followed by a representative set of three reflex forms from daughter languages in different subgroups within Chibchan. In most cases the PC forms are based on much larger sets of reflexes, but space limitations do not allow me to present them in their entirety here. I have also included for comparative purposes the corresponding Proto-Tanoan forms for those sets where they are available. These are indexed by their Whorf-Trager (1937) set numbers.<sup>3</sup>

1. ARM, HAND PUA \*sɿka (7), \*sɿka 'shoulder' (375): PC \*sak(w)a > P sawa, Gy ki-sókwo 'paw', Cu sakwa.
2. ARROW PUA \*hu (9): PC \*u > P u:kwakwa, R uru, Br u:kábot.
3. BACK, BEHIND PUA \*co 'buttocks' (66): PC \*suk > P suk-, Br skowo 'vertebra', Ch suka '2'.
4. BAT, OWL, SORCERER PUA \*tuku '2,3' (313): PC dɿk<sup>w</sup>ɿr '1,3' > Br dekúr, Tn rúkura, Ch suk<sup>w</sup>a.
5. BEND, BOW PUA \*to '1' (37): PC \*tu > Bo tun-kra '2', Cu toni 'curved, bow-shaped', Gy dotuko '1'.
6. BIRD 1 PUA \*cutu (41): PC \*culu > Gt su:lu 'wild chicken', Gy čolu-be 'heron', Cu sulu-pa 'eagle'. (PT \*sule (55))
7. BIRD 2 PUA \*totoli 'chicken' (85): PC \*tudi > Gt tu:li 'dove', Gy tōde, Bn turi. (PT \*dilu 'hen' (8))
8. BLACK, DARK PUA \*tu (45a): PC \*tu > Bo turin, Cg toã 'darkness', Mo tutu 'charcoal'. (PT \*dak'u (7))
9. BREAST 1, SUCKLE PUA \*cun 'suck' (420): PC \*cu > P su- '2', Gt ču '2', Br cu '1'.
10. BREAST 2, CHEST PUA \*pi (58): PC \*pita > Cu pina 'liver, core', Bn biča, Ch fiza 'throat'.
11. BREAST 3, CHEST PUA \*tawi (59): PC \*taba > P tawa 'neck, throat', Cg taba-, Ch ti:b-

12. BREATH, BLOW PUA \*puc '2' (49a): PC \*bur > Gt pur-, Cg mul-kala '1', Cl furí-. (PT \*p'ú/\*p'uci '2' (45))
13. BURST, BREAK PUA \*posa/\*poca 'swell' (429): PC \*bu(c)/\*pu(c) > P bo-, Br bucana, Ch posi.
14. CARRY, TAKE, BRING PUA \*w± '1,2' (77): PC \*w± > Gy wen '1,3', Cu we- '2', per-we '1,3', Cg i-veikši- '3'.
15. COLD PUA \*s±/\*s±p (94a): PC \*s±m > P seŵa, R saima, Br sēsē. (PT \*ciya (2))
16. COME PUA \*ya (pl.) (98), \*ya 'run' (358), \*y± (sg.) (97): PC \*da > Cu ta, Cg na, Tn ra-wí-; \*d± > P te?, Br de, Bo dek 'walk'.
17. COOK PUA \*yu 'warm' (453) (cf. also Tarahumara túga 'roast', Hopi t±:ve 'roast'): PC \*du > P tu, Cg nū, Gt túxe.
18. CUT 1 PUA \*sik (118): PC \*sik > R sik-, Br e-šká 'wound oneself', Cu sik-.
19. CUT 2 PUA \*t±k (117): PC \*t±k > R a-taik-, Gy tike-, Ch zike 'cut off'. (PT \*t'eyē (49))
20. DEER PUA \*su/\*suka (124a): PC \*su/\*suli > Gt suli, Tr šuriŋ, Cg sugi.
21. DOG PUA \*cu (137): PC \*šú > P šúšu, Cu aču, Cl susú.
22. EAR, HEAR PUA \*naka (148a): PC \*nak > Cu naga 'beside, edge', Gm naku, Ho naka 'cheek'.
23. EARTH 1, DIRT PUA \*t±p (150): PC \*t±p/\*tap > Bo tap-, Cu napa, Cb tipi-.
24. EARTH 2, GROUND, FIELD PUA \*t± (150): PC \*t±/\*t±ka > P -taha '3', Cu nega '1,3', Cg tei '3'.
25. EXCREMENT PUA \*sa (127): PC \*sa > P ašsa, Br sa-ña 'intestines', Cu sa.
26. FEMALE RELATIVE 1 PUA \*ka 'grandmother' (496): PC \*kak > P ka:ki 'mother', Tr kak 'sister-in-law', Ch kaka 'grandmother'.
27. FEMALE RELATIVE 2 PUA \*was (506): PC \*wac > Cmu bači 'sister', Bn wati 'aunt', Ch wa:za 'sister'.
28. FILL, FULL PUA \*pu (193), \*posa/\*poca 'swell' (429): PC \*pus > P mus- 'be full', R pus-ti-, Ch pusa 'enough, satisfied'.
29. FIRE PUA \*ku (170a): PC \*ku '1, burn' > R kun-kunu 'light', Gy kuke '2', Cu kum-mak- '2'.
30. FOOT PUA \*ta/\*to (187): PC \*ta > P taha, Gy to- 'footprint', Cu naga.
31. FUTURE, INTENTIONAL PUA \*pa (Steele 1975): PC \*-bi/\*-ba > P -pí/-pá, Br -mi '1', Ch -be Optative.
32. GO PUA \*nim-i '1, live, walk' (263a): PC \*n±N > Br -néne 'run', Cu nana, Ch n±n-.
33. GREEN, RAW, YELLOW PUA \*saw '2' (342), \*sawa 'leaf' (255), \*sawa '3' (478): PC \*saŋwa > Gt lāga '1,2', Gl yi-sama '1', Cy sana '2'.
34. HAIR 1, HEAD PUA \*coni '1' (219c): PC \*can > P sá '2', Br cá '1', Cg san-kala 'head-bone'.
35. HAIR 2, FEATHER PUA \*moc/\*mos/\*mus (214) (or \*humuca (DH) > Tubatulabal ŋumuša- '2', Luiseño humša- '2', Hopi hō'mi '1'): PC \*humVc > P ūs- '1', Gm umša 'beard', Cm ōnso-va 'mustache'.

36. HEART, MIND PUA \*sula (222a): PC \*<sup>√</sup>suN/\*<sup>√</sup>sul > Br sula-wo '1', R suri 'know', Cg -bita-suna 'lung'.
37. HEAVY, WEIGH PUA \*p<sup>±</sup>t<sup>±</sup> (223): PC \*p<sup>±</sup>/\*p<sup>±</sup>t > P pe:- '2', Cu pene '1', Ch fi:z- '2'.
38. HIDE, SKIN PUA \*ho (227): PC \*huka > R uk, Cu uka, Ch huka.
39. HIT 1 PUA \*po 'pound' (331), \*paka/\*paki '1, beat, kill' (244): PC \*puk/\*buk > P pok/buk, Br hpŭk, Tn -muxá.
40. HIT 2, KILL, HUNT PUA \*mak '1' (233), \*m<sup>ik</sup>/\*m<sup>±</sup> '2,3' (128d): PC \*ma/\*mak/\*m<sup>±</sup>/\*m<sup>ik</sup> > P mas- '1,2', Gy ko-mika '2', Cu mak- '2,3'.
41. HOLE PUA \*hora '1, open' (Whorf and Trager 1937, 13): PC \*hulu > Cu ulu 'inside', Cg hulu 'inside', Cy huru. (PT \*həw/həwol 'gulch, arroyo' (13))
42. HOUSE PUA \*hu (DH: 241): PC \*hu > Gt ú, Cu u:, Cg hu.
43. I, ME, MY PUA \*n<sup>i</sup>- 'myself' (Langacker 1976): PC \*na- > R na-, Gt -na, Cg na-.
44. INTERROGATIVE, POSSIBILITY PUA \*sa '1, Inferential, Future' (Steele 1975): PC \*sa > P -sá-h '1', Cg sa- '1', Ch -sa(n) Subjunctive, 'if'.
45. IRREALIS, PAST PUA \*ta (Steele 1975): PC \*ta > P -t/-ta Negative, Cu -ta '2', Ch -za Negative.
46. KNOT, NAVEL, KNEE PUA \*sik '2' (301), \*poci '2' (302) (cf. 'stomach' \*poka (418)): PC \*si/\*siN > P ših- '1,3', R sij '1, 3', Cu simu '1,2'.
47. LEG PUA \*kasi '2, thigh' (435): PC \*kac/\*k<sup>±</sup>c > Cg kása 'foot', Sn kas-, Mr k<sup>±</sup>sá? 'foot'. (PT \*k<sup>±</sup>ow/\*k<sup>±</sup>ũ (20))
48. LIQUID 1, SECRETION PUA \*cic/\*cit 'spit, spittle' (406), \*kV-ci 'spit, saliva' (= 'tooth-secretion') (DH: 407), PNumic \*pi-ci 'milk' (= 'breast-secretion') (DH: Davis 1966, 101b): PC \*di '1,2, water' > Gt tí, Cu ti, Cg ni.
49. LIQUID 2, SECRETION PUA \*tu 'spit' (405): PC \*tu > P -tú, Cu nuu 'milk', Cg utu 'saliva'.
50. LIVE, GROW PUA \*yo '2' (264): PC \*dul > Br duru 'sprout (n.) Cu tula 'alive', C1 lurí 'born'.
51. LIVER PUA \*n<sup>±</sup>ma (265): PC \*n<sup>±</sup>m > P neŵa/newa, Bo nom 'spleen', Ch nimi-suk 'heart'.
52. MANY, MUCH PUA \*w<sup>±</sup> '1,2, big' (39a): PC \*w<sup>±</sup>/\*wi > P wé, Cr bi:, Ch vi.
53. MEAT, FLESH PUA \*t<sup>±</sup>k 'eat meat, deer' (353b), \*tuhku (279): PC \*d<sup>±</sup>k<sup>±</sup>/\*duku > P yuku, Br čkŭ, Cg niku-alá.
54. NAIL PUA \*sut (298a): PC \*šud > P suna, G1 kulo-ko-sol 'finger', Gm k-sulu-ma. (PT \*-ci-/\*-ce- (1))
55. NECK PUA \*kuta (303): PC \*kut > Gt tu-kúra 'nape', Br kuŵi?, Cu tuk-kur. (PT \*k<sup>±</sup>wo (19)) (cf. set 73. STICK)
56. NOSE PUA \*yaka (308): PC \*dak/\*dik > Gt táiki, Br ŷik, Ch saka.
57. ONE, COMPLETE PUA \*s<sup>±</sup>m<sup>±</sup> (507b), \*s<sup>±</sup> (507a): PC \*s<sup>±</sup>m > P s<sup>±</sup> '2', R saimig '1', Br sē 'all'.
58. PERSON 1, SOMEONE PUA \*ta- Unspecified Subject (Langacker 1976), cf. also \*taka (272), \*tawa (273a), \*tana/\*ta (273c) all with glosses 'man, person, etc.': PC \*ta 'who?' > P tá-,

- Gt táika, Cu tóa (<\*ta-wa ?).
59. PERSON 2, MAN PUA \*t<sup>h</sup>w<sup>h</sup> '1, people' (273b), Mejicano teel- (273f): PC \*t<sup>h</sup>r > Tr teřaba, Gm teřúa '2', Tn séra '2'.
60. POINT 1 PUA \*pi 'breast' (58), \*wopi 'awl' (15), \*mupi 'nose' (= 'face-point') (162b): PC \*bi/\*bis > P pís-, Cu pis-, Br bi-.
61. POINT 2 PUA \*c<sup>h</sup>k 'stick (poke)' (415), cf. also PNumic \*ci 'point' (DH: Davis 1966, 23), Nahuatl čikalo- 'thorn', Hopi c<sup>h</sup>k<sup>h</sup> 'point': PC \*cik > P síki 'thorn', R sik '1, tooth, tip', Cu čikwa 'arrow'.
62. POINT 3, ANGLE PUA \*wi 'awl, needle' (14): PC \*wita > P -wé:ta 'inside corner', Br betá '1, peak', Ch vita '1, peak'.
63. POUND, BEAT, GRIND PUA \*tu '3' (206c), \*tus '3' (206a): PC \*tu > P tus- '1, peck', Cu to- '1,2', Ch to- 'break, chip'. (PT \*t<sup>h</sup>o (52))
64. PUT, PLACE PUA \*t<sup>h</sup>ka (Voegelin et al. 1962, 18): PC \*tuk > P tuk-, Cu o-tuk- 'hide', Gy čux-.
65. RAT PUA \*ka/\*kawa (340): PC \*kaki > P ka?i-, Gt koŋ 'gopher', Cg mulu-kai-kai 'big rat'.
66. ROUND PUA \*pot '1, spherical' (357): PC \*pulu > P puru-tukwa 'full (moon)', Gy bolore, Cu mullu.
67. SAND PUA \*o '1, rock' (355a): PC \*u > P ú?u, Cu ukup, Cg u-.
68. SAY, TELL PUA \*t<sup>h</sup> (434), \*ya (363)?: PC \*t<sup>h</sup>/\*d<sup>h</sup> > P ta-/ti-, Gt ti-ki, Cg nei-.
69. SEE PUA \*t<sup>h</sup>/\*t<sup>h</sup>w (365), Tarahumara riwa '1, find', Hopi t<sup>h</sup>wa 'find, know of': PC \*t<sup>h</sup>/\*t<sup>h</sup>b > Gt tí 'look for', Ch č<sup>h</sup>b<sup>h</sup>-, Mo diba 'look at'.
70. SLEEP PUA \*ku/\*kup (386): PC \*k<sup>h</sup>p/\*kap > Br kp-, Cu kab-, Ch k<sup>h</sup>b<sup>h</sup>.
71. SMELL PUA \*hu (391a), \*hupa (391b): PC \*hu > P <sup>h</sup>o-, R -ŋu-k-, Cu u-.
72. SNAKE PUA \*ko/\*kowa (395), PNumic \*to-kowa-/\*to-kohwa- 'rattlesnake' < \*t<sup>h</sup>-kowa 'rock-snake' (Sapir cited in Miller): PC \*t<sup>h</sup>kub > Br tkb<sup>h</sup>, Cu nag(u)be, Tn ríkuma.
73. STICK PUA \*kuta (170d): PC \*kuta > R kula 'bush', Mu kutá 'horn', Cg kula 'branch'. (cf. set 55. NECK)
74. STOMACH, MIDDLE PUA \*to (417): PC \*tu > Tr túwoŋ 'navel', Cu nuku '2, lap', Gy tukló 'navel'.
75. STONE, SAND PUA \*sa/\*s<sup>h</sup>/\*si '2' (360-1-2): PC \*ca/\*c<sup>h</sup> > P sa '1', Br ca '2', Cg sei '1'.
76. STRONG PUA \*pu 'medicine, power' (281): PC \*pul > P p<sup>h</sup>-, Ch fun-za 'powerful', Gy p<sup>h</sup>lu '1, hard'.
77. SUN 1, FIRE, HOT PUA \*tata '3' (423e): PC \*dada > Pn nono '1', Cu tada '1', Cr dalá-bužu 'sun-god (chief)'.
78. SUN 2, DAY PUA \*ta (or \*tapi (DH)) (423a): PC \*d<sup>h</sup>wi > Gt tóxi, Cg niwi, Mr jwi. (PT \*t<sup>h</sup>ow (51))
79. SWALLOW, EAT, DRINK PUA \*t<sup>h</sup>k '2' (Voegelin et al. 1962, 163) PC \*tuk > P tok- '1,3', Br čku- '2', Cg tuk- '1'.
80. TAKE 1, GET PUA \*cupa 'gather' (194): PC \*cu > Br cu-, Cu su-, Cg su-. (PT \*cuwi (4))
81. TAKE 2 PUA \*k<sup>h</sup>w<sup>h</sup> '1, carry' (76): PC \*ku > Gt k<sup>h</sup>, R ku-, Cg ku-. (PT \*xwiya (27))

82. TALK, SAY PUA \*pai 'call' (74), Nahuatl  $\lambda$ a-h-pal-oa 'greet': PC \*pa/\*pal > P ka-paš- '1', ka-par- 'greet', Cu pali-, Cl pá.
83. THIS PUA \*ʔi (Voegelin et al. 1962, 116): PC \*ʔi/\*ʔiN > P ʔ-, Br iʔ-, Cl ʔi-.
84. THREE PUA \*pahi (510): PC \*bai > Gt pói, Mu mai, Tn báya. (PT \*poyuwa (39))
85. TOOTH, BITE PUA \*kɨ/\*kɨy '2' (42), \*ko 'chew' (84), \*kV-ci 'tooth-secretion: saliva' (DH: 407): PC \*ka/\*aka '1' > Gt óka, Br aká, Gy ko-li 'tooth-water: saliva', \*ka 'eat' > Br kata-, Cg ka-, Ch ka-.
86. TWO PUA \*wo/\*woka (509a-b): PC \*bu/\*bo/\*buka > P po:k, Cu po, Tn bukáya. (PT \*wi/\*wiyi (58))
87. UNDER, LOWER PUA \*tuk 'below' (34), \*tuk 'deep' (122): PC \*tu/\*tuk > Gy toni '1', Ch to- '2', Cy čuka 'sink'.
88. URINE, URINATE PUA \*siʔ '1' (447): PC \*hwiši > P íši '1', Bo hwiš-ku '2', Cg hwizi '1'.
89. WET PUA \*musa 'sweathouse' (426), Luiseno mó:ma- 'sea', Nahuatl (Pochutla) mowé 'bathe': PC \*mu/\*muN > P mü-, Cm móre 'sweat', Cl mumun- 'baptise'.
90. WOMAN 1, FEMALE PUA \*ko/\*koci/\*kuci (or \*kuti (DH)) 'older sister' (492a-b): PC \*kut/\*kuti > P kor-ta, Gt ku'ri 'wife', Br kutá 'older sister'.
91. WOMAN 2 PUA \*siw (470): PC \*sɨwa > P pe:-suwa 'señora, doña', Gt ura-sifa 'child-female: daughter', Cg seiwa 'wife'. (PT \*iiw (31))
92. YELLOW, GREEN, BILE PUA \*si/\*ci (476), \*cipu 'bitter' (43): PC \*cip/\*cip > P seiwa '1', Br cipà-cipá '2', Ch čičiba 'liver'.
93. YOU PUA \*mo 'himself, themselves, yourselves' (Langacker 1976): PC \*ma/\*ba > P pa-, Cg ma, Ch ma.

The phoneme inventory of Proto-Uto-Aztecan as reconstructed by Voegelin, Voegelin and Hale is as follows: consonants \*p \*t \*c \*k \*kʷ \*ʔ \*s \*h \*m \*n \*ŋ \*r \*l \*w \*y, vowels \*i \*ɨ \*a \*u \*o.

I have reconstructed the following set of phonemes for Proto-Chibchan: consonants \*p \*t \*c \*k \*kʷ \*ʔ(?) \*b \*d \*s \*š \*h \*hw(?) \*m \*n \*r \*l(?) \*w, vowels \*i \*ɨ \*a \*u. \*d and \*l may be allophonic variants of the same phoneme. There is also some weak evidence for reconstructing \*č, \*ŋʷ, \*y, and perhaps \*ř.

The two inventories are quite similar, as we would expect from such closely related languages. The most noticeable typological differences between them are the presence of a voiced stop series in PC where none seems to have existed in PUA, and a four-vowel system for PC versus a five-vowel system for PUA. Many instances of PC \*b and \*d may eventually prove to be subsumable under \*p and \*t once the determining environments of the sound changes affecting them have been discovered. As should be evident from many of the Chibchan reflex sets given above, the Chibchan languages exhibit the same kinds of consonant weakening processes as do the Uto-Aztecan languages. For example \*p > b ~ w in sets 70, 92, etc., \*t > n ~ l ~ r in sets 54, 55, etc., \*m > ŋʷ ~ w ~ w in

sets 15, 51, etc. This can be interpreted as evidence that the two proto-languages had similar rules of allophonic variation.

Below I have listed the recurring sound correspondences between the phonemes of PUA and PC, together with a tabulation of the cognate sets in which each occurs.

PUA *p :	PC *p	in sets 10, 23, 28, 37, 39, 66, 70, 76, 82, and 92.
*p :	*b	in sets 12, 13, 31, 60, and 84.
*t :	*t	in sets 5, 7, 8, 11, 19, 23, 24, 30, 37, 45, 55, 58, 59, 63, 64, 68, 69, 73, 74, 79, 87 and 49.
*t :	*d	in sets 4, 53, 54, 77(2) and 78.
*k :	*k	in sets 1(?), 18, 19, 22, 26, 29, 40, 47, 53, 55, 56, 61, 64, 65, 70, 72, 73, 79, 85, 86, 87(?) and 90.
*c :	*c	in sets 6, 9, 13, 34, 35, 61, 80 and 92.
*s :	*s	in sets 1, 15, 18, 20, 25, 33, 36, 44 and 91.
*s :	*c	in sets 27, 47 and 75.
*s :	*ṣ	in sets 46, 54, 57 and 88.
*h :	*h	in sets 35, 38, 41, 42 and 71.
*h :	∅	in sets 2 and 84.
*m :	*m	in sets 35, 40, 51, 57, 89 and 93.
*n :	*n	in sets 22, 32, 34, 43 and 51.
*w :	*w	in sets 14, 27, 52, 62 and 91.
*w :	*b	in sets 11, 69, 72 and 86.
*y :	*d	in sets 16, 17, 50, 56 and 68(?).
*i :	*i	in sets 7, 10, 18, 46, 48, 60, 62, 78(?), 83, 84, 88 and 92.
*ɬ :	*ɬ	in sets 14, 15, 16, 19, 23, 24, 32, 37, 40, 51, 52, 53, 57, 59, 68, 69 and 75.
*ɬ :	*a	in sets 1, 23(?), 43 and 85.
*ɬ :	*u	in sets 53(?), 64 and 79 (all / <u>k</u> ).
*a :	*a	in sets 1, 11, 16, 22, 25, 26, 27, 30, 31, 33(2), 40, 44, 45, 47, 56, 58, 65, 73, 75, 77(2), 82, 84 and 86.
*a :	*ɬ	in sets 47(?), 68(?) and 78.
*o :	*u	in sets 3, 5, 6(2), 7, 13, 38, 39, 41, 50, 66, 67, 72, 74, 86(?) and 90.
*o :	*a	in sets 30(?), 34 and 93.
*u :	*u	in sets 2, 8, 9, 12, 17, 20, 21, 28, 29, 35(?), 36, 42, 49, 53(2)(?), 54, 55, 63, 71, 73, 76, 80, 87 and 89.
*u :	*ɬ	in sets 4(2), 53(2)(?) and 70.

Often in attempts to demonstrate more distant relationships (as, for example, in the case of Aztec-Tanoan) the best that can be done is to show the existence of large numbers of matchings of initial consonants in lexical morphemes of similar meaning, while ignoring the lack of similarity among medial consonants and vowels. Here, however, the closeness of the Aztec-Chibchan

relationship is indicated by the high degree of similarity between both consonants and vowels throughout the cognate sets, by the large number of CVC (and even CVCV) matchings in basic vocabulary items, and by the matchings between grammatical morphemes. In fact, in most cases reflex forms from one family would not seem out of place if they appeared among the corresponding reflex sets of the other family.

Given the closeness of the relationship, data from one family should be able to provide clues for the solution of problems in the other. As an example of this, consider the following. The anomalous correspondence PUA \*c : PC \*d in set 48. LIQUID 1, SECRETION PUA \*ci/\*cit/\*cic : PC \*di, is valid only if the change \*t > \*c/\_ i took place at some stage of Pre-PUA or in a much larger subset of daughter languages than is generally supposed. If this had happened, we would expect to find few or no examples of PUA \*ti sequences. And, in fact, this is the case. Miller gives in effect only a single reconstruction in initial \*ti, namely the form for 'boy, man' : \*ti/\*ti'o/\*tiho, which he lists in three different places (sets 55, 273d-e). There are at least a dozen reconstructions for each of the other initial \*tV possibilities. Similarly, there are only three cases of reconstructed medial \*ti in Miller's list: \*mati 'know' (249), \*hatis 'sneeze' (396), and \*kuti 'nephew' (503). \*hatis is probably onomatopoeic and therefore resistant to sound change. \*kuti is not a well-founded reconstruction, since one of the two reflex forms on which it is based, Luiseno kuli-may 'older sister's son', seems to mean etymologically exactly that (cf. sets 492a and 86), and should be included among the reflex forms for 'older sister' (492a). Notice that the \*ti > \*ci hypothesis accounts for the r ~ c alternation among the reflex forms in sets 492a and b. The indicated reconstruction is \*kuti, which corresponds exactly to the reconstructed PC form in my set 90. The remaining \*ti reconstruction, \*mati, has the variant form \*maci, which reflects the fact that the \*t > c change took place in some daughter languages in which it was not expected. There is additional evidence for the \*ti > \*ci change in Miller's listing of reconstructions with medial \*c (p. 79). There fully 15 of the 27 forms listed contain \*ci. Some of these are almost certainly reflexes of Pre-PUA forms with \*ti.

Another important problem area indicated by the comparative evidence is the discrepancy between the vowel systems of the two proto-languages. The large number of PUA \*o : PC \*u matchings implies to me a need for reevaluation of my criteria for setting up only a single back round vowel for PC. It will be necessary to double-check what I have established as conditioning environments for the change \*u > o in the Chibchan daughter languages. It may ultimately prove necessary to reconstruct a fifth PC vowel, \*o, or, alternatively, to postulate a PC vowel length opposition.

As these examples suggest, the Aztec-Chibchan relationship should provide a huge new storehouse of relevant materials for comparative studies in both branches of the new phylum. I sincerely hope that the evidence I have presented here is convincing

enough to at least pique the curiosity of researchers in both Uto-Aztecan and Chibchan, as well as American Indianists in general. There is no longer any reason for the relationship to lie unrecognized, as it seems to have during the more than twenty years since Swadesh noticed it. The comparative data I have provided is intended as merely a preliminary step toward the reconstruction of the language of a group of people whose descendants once ranged over this hemisphere from Montana to Bolivia.

## NOTES

1. In Swadesh (1967) he does reaffirm his belief that Chibchan and Uto-Aztecan are closely related, but without providing any additional evidence.
2. The Paya data used in this study are based on field-work I did in Vallecito and Dulce Nombre de Culmí, Olancho, Honduras, during the period March through August, 1974, while I was employed as a Research Assistant under National Science Foundation grant NSF-GS-39634 to the University of Missouri, Lyle Campbell, Principal Investigator.
3. The glosses which head the cognate sets are intended as tentative reconstructions of the approximate semantic range of the etymons at the Proto-Aztec-Chibchan stage of their development. Throughout the cognate sets, glosses are not given for reconstructed forms or for Chibchan reflex forms if they are identical to the heading gloss(es) or to the PC gloss(es). If the gloss of a form is identical to only one or a subset of the heading glosses or PC glosses, these are indexed by numbers: '1' = first gloss, '2' = second gloss, etc.

The following abbreviations are used for the names of languages: PUA Proto-Uto-Aztecan, PC Proto-Chibchan, PT Proto-Tanoan, PNumic Proto-Numic, Bn Bántucua, Bo Boruca, Br Bribri, Cb Cabécar, Cg Cágaba, Ch Chibcha, Cl Colorado, Cm Chimila, Cmu Chumulu, Cn Changuena, Cr Chiripó, Cu Cuna, Cy Cayapa, G1 Gualaca, Gm Guamaca, Gt Guatuso, Gy Guaymí, Mo Motilon, Mr Marocacero, Mu Murire, Mv Move, Pn Penonomeño, P Paya, R Rama, Sb Sabanero, Sn Sinsiga, Tn Tunebo, Tr Terraba.

The abbreviation DH in parentheses after a form indicates a reconstruction I have made on the basis of data provided by an earlier researcher (Miller, if not otherwise stated).

## BIBLIOGRAPHY

- Acosta Ortegón, J. 1938. El idioma chibcha. Bogotá: Imprenta del Departamento.
- Alphonse, E. 1956. Guaymí Grammar and Dictionary with some Ethnological Notes. Bulletin of the Bureau of American Ethnology 162. Washington, D.C.
- Bogarín Benavides, J. 1972. A Restricted Grammar of Bribri. Universidad de Costa Rica tesis de licenciado.
- Bourland, D. 1973. Lista de doscientos vocablos. Xerox MS, Universidad de Costa Rica.
- Constenla Umaña, A. 1975. La lengua guatusa: fonología, gramática

- y léxico. Universidad de Costa Rica tesis de licenciado.
- Davis, I. 1966. Numic Consonantal Correspondences. IJAL 32.124-140.
- Girard, V. 1971. Proto-Takanan Phonology. UCPL 70. Berkeley and Los Angeles.
- Holmer, N. 1947. Critical and Comparative Grammar of the Cuna Language. Etnologiska Studier 14. Göteborg: Etnografiska Museet.
- \_\_\_\_\_. 1952. Ethnolinguistic Cuna Dictionary. Etnologiska Studier 19. Göteborg: Etnografiska Museet.
- Holt, D. 1976. Pano-Takanan as a Macro-Chibchan Phylum. Paper presented at the Annual Meeting of the Southwestern Anthropological Association, San Francisco.
- Key, M. 1968. Comparative Takanan Phonology. The Hague: Mouton.
- Langacker, R. 1970. The Vowels of Proto Uto-Aztecan. IJAL 36.169-180.
- \_\_\_\_\_. 1975. Non-Distinct Arguments in Uto-Aztecan. UCPL 82. Berkeley and Los Angeles.
- Lehmann, W. 1920. Zentral Amerika. Berlin: Dietrich Reimer.
- Matteson, E. 1972. Comparative Studies in Amerindian Languages. The Hague: Mouton.
- Miller, W. 1967. Uto-Aztecan Cognate Sets. UCPL 48. Berkeley and Los Angeles.
- Moore, B. 1962. Correspondences in South Barbacoan Chibcha. Studies in Ecuadorian Indian Languages, ed. by B. Elson, 270-289. SIL Linguistic Series 7. Norman, Oklahoma.
- Pittier de Fabrega, H. 1898. Die Sprache der Bribri-Indianer in Costa Rica. Sitzungsberichte der Kais. Akademie der Wissenschaften, Philologisch-historische Klasse 138:6. Vienna.
- Preuss, K. 1927. Forschungsreise zu den Kágaba/Beobachtungen Textaufnahmen und sprachliche Studien bei einem Indianerstamme in Kolumbien, Südamerika. St. Gabriel-Mödling bei Wien, Austria: Anthropos.
- Rivet, P. 1924. La langue Tunebo. JSA, n.s., 16.19-92.
- Shell, O. 1965. Pano Reconstruction. University of Pennsylvania dissertation.
- Steele, S. 1975. Past and Irrealis: Just What Does It All Mean? IJAL 41.200-217.
- Swadesh, M. 1954. Perspectives and Problems of Amerindian Comparative Linguistics. Word 10.306-332.
- \_\_\_\_\_. 1967. Lexicostatistic Classification. Linguistics, ed. by N. McQuown. Handbook of Middle American Indians, ed. by R. Wauchope, 5.76-115. Austin: University of Texas.
- Voegelin, C., F. Voegelin, and K. Hale. 1962. Typological and Comparative Grammar of Uto-Aztecan: I (Phonology). IUPAL, Memoir 17. Baltimore: Waverly.
- Wheeler, A. 1972. Proto-Chibchan. Comparative Studies in Amerindian Languages, ed. by E. Matteson et al., 93-108. The Hague: Mouton.
- Whorf, B. and G. Trager. 1937. The Relationship of Uto-Aztecan and Tanoan. AA 39.609-624.